

Impact of Implementing the Curriculum Instructions to achieve National Objectives in Science Subjects through Teaching Learning Process

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Abstract

Purpose of the study was to analyze the impact of adopting curriculum instruction to achieve national objectives through teaching learning process in secondary schools. Population of the study comprised of all the secondary school science teachers and secondary school science students of government sector. Sample of the study consisted on one hundred and eighty (180) secondary school science teachers and one thousand seven hundred and forty (1740) secondary school science students. The study was delimited to only science teachers and students of science classes of government secondary schools. The questionnaires one, each for science teachers and science students were used as research tools. After pilot testing the researcher personally visited the selected secondary schools and collected data from the respondents in six (06) districts. The collected data was analyzed through using frequency, percentage, simple mean and other relevant statistical formulas. In the light of research findings it was concluded that conventional method was commonly adopted to teach science classes in most of the government secondary schools. The study recommended that new scheme of studies, innovative teaching methods for science subjects, availability of resource materials and digital technology should be reconsidered on top priority.

Keywords: *Executing curriculum scheme, national objectives, teaching learning environment, teaching methods.*

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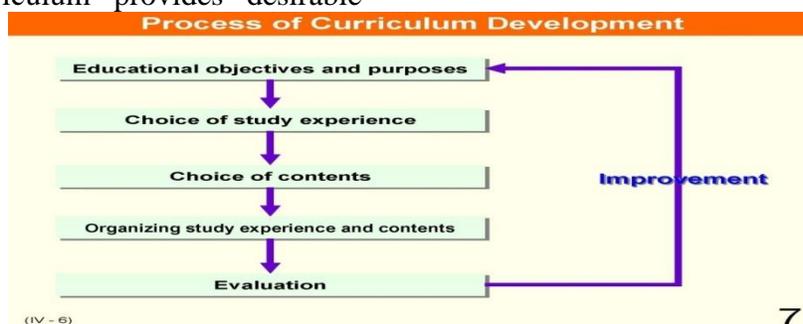
Introduction

The term ‘curriculum’ signified a course of studies followed by a pupil in a teaching institution. Presently, it means, generally speaking, the contract between society, the State and educational professionals with regard to the educational activities that learners should undergo during a certain phase of their lives to learn something desirable. Standard dictionaries define curriculum as a course of study offered by an academic institution. Joseph (2011) described that the curriculum is formal and informal content and process by which learners gain knowledge and understanding, develop skills, and alter attitudes, appreciations, and values under the auspices/ of an academic institution. In other words, curriculum can be defined as the total experience. According to Slattery, (2006) curriculum is not only the content selected and delivered, but also the planned and unplanned activities in which individuals’ participate as students.

According to De Conic (2008), curriculum, more than ever before, is now viewed as being at the center of daily life and the responsibility of society as a whole. Curriculum development today presents both a strategic process challenge as well as a policy challenge. Curriculum development is an important and central area of higher education. Curriculum provides desirable

experiences. Curriculum development is a process in which choices of learning experiences are made and activated through coordinated activities. Main factors of curriculum development are; goals, learners, bases of curriculum, and curriculum design, it is architectural portion of whole process. Curriculum is the foundation of the teaching-learning process. The development of programs of study, learning and teaching resources, lesson plans and assessment of students, and even teacher education are all based on curriculum. Curriculum and curriculum development at first glance appear to be of chief concern to educators, governments and parents, and both have relevance and impact on the development of communities and prosperity.

Qureshi, (2007) discussed that the term “Curriculum” would be understand to including all major factors related to concept of curriculum process of curriculum development, role of curriculum development, global trends of curriculum development, selection, analysis and organization of curriculum development and qualities of a good curriculum developer. In a nutshell, the term curriculum development indicates key areas of activity that and educationist and experts has to follow when developing the curriculum of specific level.



Source: <http://www.google.com>, dated 23-09-2016.

According to Iqbal (2009) there are two approaches about the nature of science; traditional approach and contemporary. The traditional approach science is an organized knowledge of facts, theories and natural phenomenon. Nature acts in a particular way and what is known about natural phenomenon which is absolute and final. The teacher who is having traditional approach believes that he/she has to transmit a fixed body of knowledge (given in textbooks) to the students and students are bound to memorize it without any change. Newsam (2003) describes that traditional approach relies on already selected set of facts and teacher is embodiment to be the distributor of knowledge who has to pass on the fixed knowledge to the students in one way or the other. Traditional approach uses competition and questioning technique to motivate students or to assess their achievements. On the other hand, contemporary view takes science as an evolving phenomenon and it urges student to make a concept by interacting the world around him under the guidance of teacher. According to Richardson, (1997) learning in contemporary setting is achieved by problem solving, inquiry, active engagement of student in activities and by mutual interactions of students. In this approach knowledge is acquired through involvement with contents instead of repetition.

Gallagher (1991) opined that modern science curricula in various countries of the world emphasizes not only on understanding of science concepts but also on variety of other goals such as understanding of nature of science. Many of secondary textbooks give only thoughtless attention to the nature of science, usually in first two chapters while during instruction more attention is given to concepts and principles than to the process which is contrary to the approach used to formulate these books.

Iqbal, Azam and Rana (2009) concluded from a research on 200 science teachers chosen from 37 secondary schools in Pakistan that most of the teachers (60.45%) had traditional view about nature of science. This teacher's belief about nature of science not only influences students' development but also their way of teaching in the science class. Hence teachers training programs emphasize to change teachers belief from traditional to contemporary using explicit (history and philosophy of science) and implicit (inquiry and science process skills). According to Iqbal (2011) the most commonly used method of teaching in Pakistan is textbook reading, chalk and talk. This method becomes more verse when only one book is followed as in Pakistan. The use of audio-visual aids is totally ignored even cheaply and readily available resources like charts and models are rarely used to facilitate teaching/learning of science concepts in some schools. The real science teaching in which teacher is engaged in helping students according to their capabilities and in which teachers are supplemented by adequately planned curricula and highly organized instructional methodology is rarely seen in Pakistan where in some schools, science class reaches up to 100 students per class (UNESCO, (1987).

In Pakistan majority of science teachers were not using audio visual aids during teaching science classes at secondary school level. The study also indicated that in most schools educational technology items and space for using these items was not available. It was also found that majority of schools do not arrange science exhibitions and field trips to encourage healthy science activities among students (Akhtar, 2009).

According to Govt. of Pakistan (2009) the infrastructure facilities in schools are nonproductive, inadequate and old-fashioned especially in rural areas. Pakistan

Education Statistics shows that, “in public sector, around 40% of schools are without boundary wall, 36% without drinking water facility, 61% without electricity, 39% without sanitary facilities and 6% without any building”. There is very short supply of teaching aid and a few libraries existed. Co-curricular activities, necessary for overall development of child are absent in most school. There is highly inadequacy of facilities regarding infrastructure of school in rural areas. According to Naseer-ud-din et al., (2010) majority of students identified that availability of textbooks, classroom facilities laboratory facilities are appropriate but most of the classrooms are overcrowded,

Objectives of the Study

Major objectives of the study were;

- To review the related literature of instructional methodologies and national curriculum.
- To analyze impact of implementation on curriculum instructions to achieve the national objectives.

Research Questions

Research questions of the study were;

- What is background of the instructional methodologies and national curriculum?
- Which components are necessary for teaching learning process of secondary classes in Govt. Schools?
- What are the suggestions for creating effective teaching learning process?

Research Methodology

The study was descriptive in nature. Population of the study was comprised of all of the secondary school science teachers and all of the secondary school science students

number of periods for practical work is not sufficient and most of the teachers do not use audio-visual aids during science classes regularly. According to Rasheed (2000), In Pakistan the procedures for the development of curriculum at various levels of schooling are apparently different.

In order to achieve national objectives of curriculum in education, we need to improve not only the teaching methods, curriculum and future system of evaluation but also try to solve those problems which are faced by the science teachers during the teaching. It is essential to keep curriculum and teaching methodologies updated and to evaluate its effectiveness on regular intervals.

- To explore the factors affecting teaching learning process in secondary classes.
- To suggest certain measures for creating effective teaching learning process.

- What is the impact of implementing the curriculum instructions to achieve the national objectives?

in the secondary schools including the same ratio of urban and rural as well as public and private. According to Best and Khan (2003) in survey research the sample should be large enough than experimental researches to represent the population. Sample of the study consisted on one hundred and eighty (180) secondary school science teachers and nine hundred and eighty (980) secondary school science students. The sample size was rationalized as Cohen, Manion and

Morrison (2008) suggested selecting form the size of population i.e. “if the population of a research study is 100,000 and above, the size of sample should be 384 as appropriate”. The study was delimited to only science teachers and students of science classes in secondary schools. The

questionnaires were designed on five point Likert scale one each for secondary school science teachers and science students to collect data. The researcher personally visited and collected data from selected teachers and students from the Punjab province.

Data Analysis and Interpretations

Table 1
Teachers Opinion about Implementing the Curriculum Instructions to achieve National Objectives

| Themes | SDA | DA | A | SA | Mean | Sig. |
|--------------------------------|-----|------|------|------|------|-------|
| Teaching strategies | 12% | 41% | 43% | 4% | 2.39 | 0.031 |
| Helping resource material | 27% | 55% | 14% | 4% | 1.95 | 0.181 |
| Audio visual aids | 7.4 | 31.7 | 46.1 | 14.8 | 2.68 | 0.011 |
| Examples from daily life | 3.5 | 7.0 | 54.4 | 35.2 | 3.21 | 0.020 |
| Science models. | 3.9 | 16.5 | 53.5 | 26.1 | 3.02 | 0.053 |
| Question answer | 5.2 | 6.1 | 43.0 | 45.7 | 3.29 | 0.034 |
| Project | 7.4 | 10.0 | 54.4 | 28.3 | 3.03 | 0.041 |
| Discussion | 4.8 | 12.6 | 44.8 | 37.8 | 3.16 | 0.025 |
| Independent thinking | 4.8 | 9.6 | 51.3 | 34.4 | 3.15 | 0.059 |
| Content knowledge | 4.8 | 13.9 | 53.5 | 27.8 | 3.04 | 0.043 |
| Critical discussions | 4.8 | 20.9 | 49.1 | 25.2 | 2.95 | 0.201 |
| Scientific concept | 5.7 | 32.6 | 43.0 | 18.7 | 2.75 | 0.031 |
| Planning their own experiments | 5.2 | 25.7 | 55.7 | 13.5 | 2.77 | 0.032 |

Above table shows that majority of science teachers (53%, mean score = 2.39) disagreed that teaching strategies being used to teach science subjects are suitable. Significant majority (82%, mean score = 1.95) of respondents disagreed that sufficient resource material is available for teaching science. Majority of science teachers (82%, mean score = 2.95) agreed

that I use locally available materials for teaching science class. Significant majority (79%, mean score = 2.98) of respondents agreed that I use class competition as a tool to improve quality of science teaching. Majority of science teachers (61%, mean score = 2.68) agreed that I use audio visual aids while teaching science at secondary level. Significant majority (90%, mean score

= 3.21) of respondents agreed that I quote examples from daily life to explain a scientific concept. Majority of science teachers (80%, mean score = 3.02) agreed that I encourage the students to prepare science models. Significant majority (89%, mean score = 3.29) of respondents agreed that I encourage the students to ask questions, during science class. Majority of science teachers (83%, mean score = 3.03) agreed that I appreciate projects made by the science students. Significant majority (92%, mean score = 3.16) of respondents agreed that I allow group discussion in the science class. Majority of science teachers (86%, mean score = 3.15) agreed that I provide an

opportunity for students to think independently in science class. Significant majority (81%, mean score = 3.04) of respondents agreed that I apply student knowledge to real life situations. Majority of science teachers (74%, mean score = 2.95) agreed that I encourage critical discussions in science class. Majority of science teachers (62%, mean score = 2.75) agreed that Sufficient practical work is conducted to make the scientific concept understand to the students. Significant majority (69%, mean score = 2.77) of respondents agreed that I provide an opportunity to the student for planning their own experiments to verify the hypothesis.

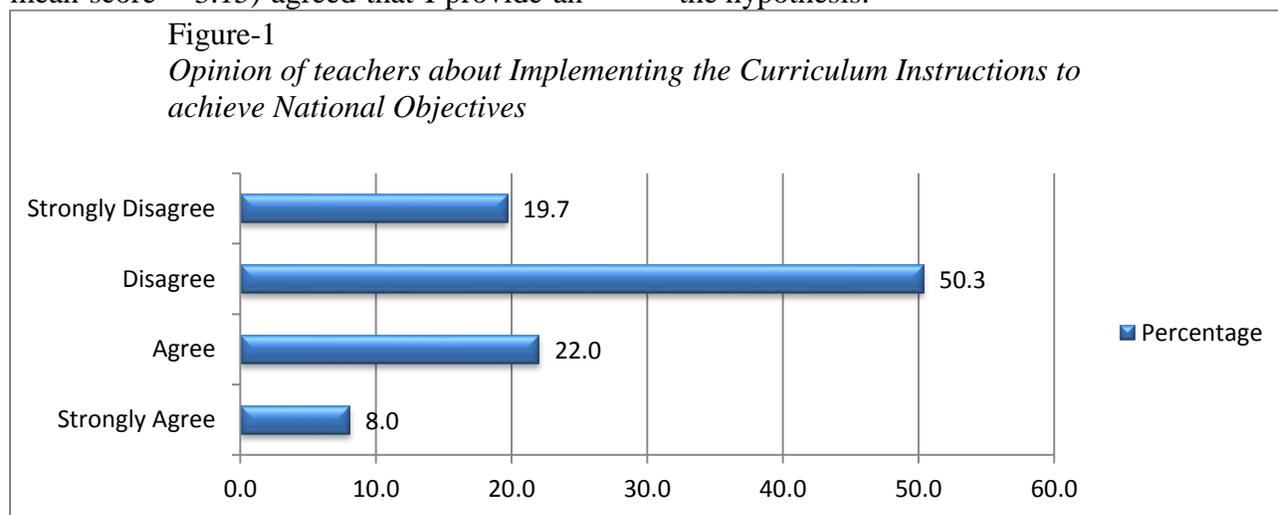


Figure-1 describes the opinion about implementation the curriculum instructions to achieve national objectives. The figure shows the overall impact of curriculum instructions to achieve national objectives in Pakistan. Data reveals that majority of the

participants (70.0%) disagreed that curriculum is not implemented properly. Curriculum objectives at national level are only long wish list. The curriculum should be implemented in the light of the objectives of the national priorities and process.

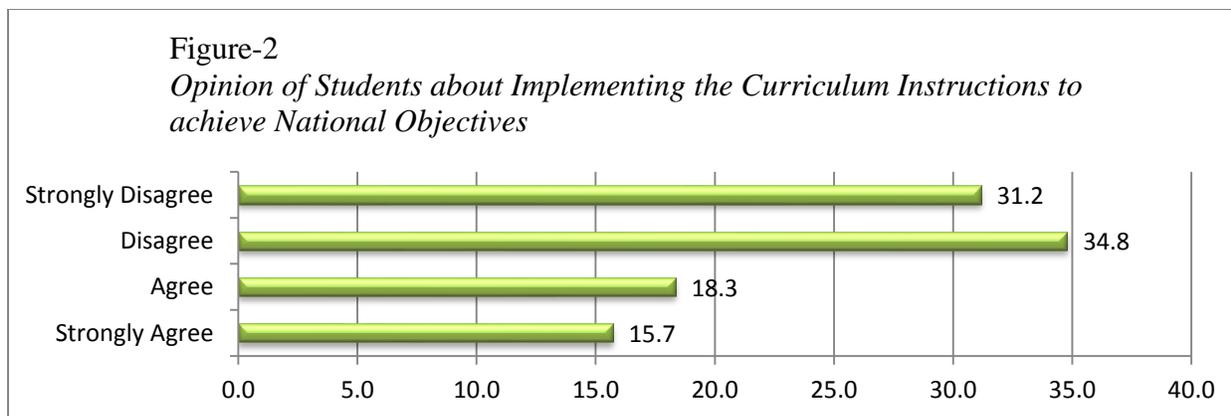


Figure-2 describes the opinion of secondary school students regarding curriculum to achieve national objectives. Data identifies that (65%) students were found disagreed that curriculum is not

implementing properly in the light of national objectives. The content of national curriculum is beyond of national and societal demands.

Discussion and Conclusions

The results of present study give a very clear idea to understand the application of curriculum instructions to achieve national objectives of curriculum through teaching learning process in secondary schools. Majority of science teachers teaching at SSC level were well qualified, trained and well- experienced. Majority of them disagreed that teaching methods which are being used to teach science subjects are suitable and sufficient resource material is available for teaching science, they use locally available materials, audio visual aids, quote examples from daily life, and use class competition as a tool to improve quality of science teaching. Joseph (2011) described that the curriculum is formal and informal content and process by which learners gain knowledge and understanding, develop skills, and alter attitudes, appreciations, and values under the auspices of an academic institution. Teachers encourage the students to prepare science models, to ask questions, appreciate projects made by students and allow group discussion in the class. Most of the teachers provide handsome opportunities

for students to think , rethink independently, match student knowledge to real life situations and encourage critical discussions in the class. According to Slattery, (2006) curriculum is not only the content selected and delivered, but also the planned and unplanned activities in which individuals' participate as students. Teachers provide opportunity to the student, for planning their own experiments to verify the hypothesis, to make careful observations, to collect data, to deduce results. However, they acknowledge that the practical work is conducted on regular basis. Teachers agreed that book method, lecture method, demonstration method and discussion method is frequently used to teach science and use of activity method, inquiry method, problem solving method and project method is rare. According to them annual exam is the only tool for assessing students achievement but it only test the memorization power of student. Majority of teachers disagreed that assessment techniques used at secondary level are appropriate and that the examinations accurately measure the ability

of student to apply the knowledge on real life situations as a result teachers emphasize the students to memorize the whole books for getting good marks in the examination. Sufficient funds are not available for science projects. Consequently, management rarely arrange field trips and science exhibitions. According to Iqbal (2009) there are two approaches about the nature of science; traditional approach and contemporary. The traditional approach science is an organized knowledge of facts, theories and natural phenomenon. According to most of students lesson presentation in SSC science class is interesting, teachers clear the concepts with full strength, teachers use language which is understandable to the students, teachers seek student's attention before starting to teach a new lesson, teachers involve students in lesson through relevant questions, teachers start a new topic by introducing previous knowledge of the students, teachers help the students if they feel difficulty to solve a problem, teachers encourage the students to ask questions during a science class, teachers quote examples from other science subjects to explain the concept but mostly do not use

models, charts, show slides, show videos, use demonstrations, additional books and science equipment to explain the concept, they make use of locally available materials to make models, use black /white board, quote sufficient examples from daily life to explain the concept. Students remain actively involved during science class, teachers appreciate questioning in the class and teachers' questions during the science class help students to understand the concepts. During a science class students prepare the notes, and take part in discussions. Teachers encourage them to take part in discussions and they share their ideas with science teacher. Science teacher use variety of methods to teach science subjects but mostly lecture and book reading method is in practice. Teachers appreciate students when they make science models but mostly science quiz and science exhibitions are not arranged in the school. Students do not go to science lab to perform practical on regular basis as they do not perform practical of science subjects throughout the academic year instead in most schools student perform practical at the end of session.

Recommendations of the study

Based on the overall findings of the study it is recommended that student centered and interactive approach should be adapted for stimulating and developing high level thinking among students. Teacher should emphasize on understanding of concepts by organized investigation and discussion. Industrial and technological applications incorporated with social, economic and environmental issues should be discussed in the class to increase curiosity. One of the alarming results of the study is that most of teachers are using lecture method and learning environment has little room for students to learn and

apply knowledge in real life with a minute degree of creativity. It seems appropriate to suggest that curriculum must initiate paradigm shift from traditional methodologies to inquiry based learning which should emphasize on process instead of subject matter focusing on curriculum objectives. Teachers should use maximum demonstrations during science class to clarify the concept and inculcate inquiry skills by engaging the students in purposeful activities. Teachers' role may be a facilitator who let the students think independently to investigate the solution of particular problem using scientific method of study.

Active participation of students should be ensured by using discussion method, activity method, inquiry, problem solving and project method. Activity based teaching technique needs to be promoted in actual classroom practices. At first level activities could be used to observe, to measure, to verify the concepts and principles given in the text. At next stage these activities should be extended for open-ended investigations. Additional emphasis should be given on co-curricular activities like science quizzes, science fairs, field trips and industrial trips to encourage investigative abilities, creativity and inventiveness. Teacher-student interactions and student-student interactions should be improved for better teaching learning environment. Science teacher should discuss their difficulties regarding curriculum implementation with

their colleagues, curriculum developers, educationists and scientists to enhance quality of science teaching. Instructional material and audio-visual aids are essentially required to enhance motivation and student interest in science learning. It is recommended that a modern teaching kit fulfilling the needs of revised science curriculum should be developed and provided to each school. Scientific concepts could be made understandable only with the application of knowledge. The study shows that teachers have serious concerns over the weight age given to the practical work in the curriculum and the time given in the timetable for laboratory work. The other findings of the study conclude that very little time is allocated for practical work spent in the laboratories.

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